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AUTHOR Salem, Philip
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ABSTRACT

Contemporary communication technologies often produce opposite results: social isolation and increased connectedness, decentralized structures and centralized structures, special and unique identities and roles and also homogenized social identities, more complex socialization patterns and simpler socialization patterns, a more defensible personal space and a more permeable personal space, etc. This paper describes three paradoxical impacts and analyzes potential predictors of the impacts. The paper concludes that the social impacts of electronic communication technology (ECT) are as varied as the initial conditions prior to their use, reiterating that, in many instances, one type of social impact will exist along with an apparently opposite impact. Contains 21 references. (Author/NKA)

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Paradoxical Impacts of Electronic Communication Technologies

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Philip Salem
Southwest Texas State University
San Marcos, TX USA 78666
ps05@swt.edu

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Abstract

Contemporary communication technologies often produce completely opposite results: social isolation and increased connectedness, decentralized structures and centralized structures, special and unique identities and roles and also homogenized social identities, more complex socialization patterns and simpler socialization patterns, a more defensible personal space and a more permeable personal space, etc. This paper describes three paradoxical impacts and analyzes potential predictors of the impacts.

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Paradoxical Impacts of Electronic Communication Technologies

Electronic communication technology (ECT) refers to a myriad of contemporary information processing and communication methods. ECT includes computer-mediated-communication (CMC), but CMC includes a range of activities from bulletin boards to e-mail to chat rooms. The information processing that is part of solitary computer work is also a part of ECT, but again the scope of this work includes all manner of hardware, software, data preparation, manipulation, storage, and retrieval, and, furthermore, data may mean anything from numbers to animation. Of course, ECT includes traditional mass communication, but mass communication involves everything from journalism to entertainment. Telecommunications may have been the first activities scholars or the public identified as ECT, but the changes in telecommunication technology influence the other ECTs as well as changing the nature of telephone use. In the next century it may difficult to distinguish the various forms of ECT, and one could argue that there will be an inevitable convergence.

What these contemporary technologies have in common is that they employ electricity, and this has led to approaches to communication and human behavior radically different from the older literary and print models and radically different from each other. McLuhan argued that these technologies would tribalize, razing hierarchies, specialization, and nationalism in favor of social flexibility and global identity (McLuhan, 1964; McLuhan & Fiore, 1967). Contrarily, the new ECTs emphasize digitalization, computation, and simulation, characteristics of the older technologies (Wooley, 1992). Miniaturization has generated machines

with an artificial intelligence that is based on digitalization and computation and acting as if they were human. Deep Blue does not think in the same way as Garry Kasparov, but Deep Blue can produce results similar to Garry Kasparov. The message in a usenet group or gaming room may be coming from a person, an avatar, or a program. In the world of ECT, precision begets ambiguity, and fuzzy logic improves precision.

Rogers (1986) argued that understanding the new technologies requires a new way at looking at the social impacts of the new technologies. He criticized past mass communication research for employing a linear model of communication, one in which media "caused" changes in individual behavior. The older research first assumed media had a direct influence, then moved to a minimal effects model, and evolved to include multiple variables and contingencies in various conditional effects models (Rogers, 1986, 150-159). Rogers argued for a more process orientation to theory and research methods. Rather than dealing with the effects of media on individual behavior at single points in time, research should investigate the more macroscopic consequences of the new media. He suggested six social impacts, and I will describe some later in this paper.

Rogers (1986) identified three common dimensions of social impacts. The first is desirability, and there has been much written about both desirable and undesirable social impacts. The second dimension is the directness of the impact. There are those impacts that occur immediately after the introduction of the new media, and then there are the indirect or secondary impacts that occur as a consequence of the first. For example, new office technology may improve productivity in some work, a direct impact, and the "experts" in this new technology will improve their status, an indirect impact. Finally, there is the

extent to which individuals could anticipate the impacts of the technology. For example, managers may have purchased new equipment with the intent of improving productivity, but they may not have considered how the technology might change social status. The changes in productivity were the anticipated impacts, and the changes in social structure were the unanticipated ones. These distinctions are useful since particular poles of these dimensions tend to cluster together. Desirable, direct, and anticipated often go together as well as do undesirable, indirect, and unanticipated.

One aspect of social impacts Rogers did not anticipate was the occurrence of seemingly contradictory or competing impacts within the same social system. A new computer system may improve overall computer literacy but diminish interpersonal competence. After some time, the gains in the improvements of some tasks may be offset by the losses in social synergy, and overall organizational effectiveness would reach a point of only marginal gain (Salem & Gratz, 1989). Although the new office technology may alter the relative worth of various social resources and provide the opportunity for changing social stratification, those already in positions of power may be most likely to obtain or use the new technology. Technology may simultaneously alter and reinforce the current stratification. In the next section I will describe three broad types of paradoxical social impacts. The final section of this paper will identify predictors of these impacts in a given social system.

Paradoxical Social Impacts

Characteristics of Social Systems and Blurred Social Spaces

In No Sense of Place Joshua Meyrowitz (1985) argued that contemporary communication technologies limit the ability of individuals to make social and psychological distinctions, and that heavy involvement with these technologies may be restricting social development in some cultures. Although he directed many of his arguments at television, he developed his model from a broader analysis of social situations and communication. His analysis highlighted three characteristics of a social system, and he identified the features of technology that encourage social entropy.

The distinct nature of social spaces and social situations is an important part of three social processes. (1) Group identity is an individual's sense of association or identification with various other groups or categories of people, and it includes the tendency of group members to share a sense of what they have in common and what distinguishes themselves from others. (2) Hierarchy refers to social relationships with actors of unequal rank, authority, or status. Hierarchy refers to the extent of social stratification. (3) Socialization is a process by which a group incorporates individuals, and the process includes the movement of an actor from one transitionary social situation or space to another. The disjunctive nature of information processing and communication is a crucial feature of group or role identities. The greater the number of distinct social information systems, the greater the number of identities (Meyrowitz, 1985, p. 131). Furthermore, these differences may privilege some and hinder others, generating hierarchy or social stratification. The more restricted the access to and the more control over specialized information or skill, the greater the stratification (Meyrowitz, 1985,p. 160). Socialization involves moving from one distinct stage to another. The greater

the number of distinct social information systems, the greater the possibility for establishing and maintaining clear stages of socialization (Meyrowitz, 1985, p. 150).

The abstract and arbitrary nature of communication assists in defining a social situation. When a type of communication requires a specialized knowledge of that type of communication, communication serves to restrict access to a social space. For example, individuals working in the same organization often use an argot, terms and acronyms unique to their organization, and an individual outside the organization cannot enter the conversation without knowledge of the language form. If the organizational members choose to include the "outsider," they do so by using a more common, general, and ambiguous language, or they may choose to use a specialized language unique to a social space shared by the outsider. The organizational members might choose to talk about parenting knowing that the outsider is a parent. Meyrowitz used several well-known dichotomies (Goffman, 1969; Langer, 1957: Watzlawick, Beavin, & Jackson, 1967) to make the point that social situations obtain definition through the use of exclusive means of communication.

Any ambiguous social situation results in the most general and abstract behaviors. For example, when an actor confronts a new and unfamiliar culture, the actor chooses the more inoffensive and less personal behavior. Likewise, when a social situation contains a mixed audience the actor resolves the role-conflict by presenting a more general and ambiguous message. For example, when a professor enters a conversation, students complaining about an assignment might change their conversation to a more general topic or they might talk about the assignment in more general ways.

Meyrowitz (1985) argued that contemporary technologies deprived social actors of a protected and restricted social space, a backstage. Television often places the viewer sidestage, observing the social actor moving from the front to the back to the front. Actor behavior becomes more general and the observer has a more difficult time distinguishing "stages," social situations. Observers develop "para-social" relationships with performers and characters, imagining or believing they "know" the others or have relationships with them because they experience them through television. When an author, performer, or political figure appear on television, they appear to be "just like" the viewers. Public access television and the emergence of a variety of talk show and interview show formats mean that all levels of society may have access to the public media, even to discuss private topics. Roles become indistinguishable, observers and performers share the same knowledge and communicative skill (highly rated shows exhibit this), and everyone has access regardless of age or maturity. Meyrowitz suggested similar effects for CMC.

A separate social space contains information that is unique to that space. The information a role routinely processes that other roles do not, defines a role. Without a defined backstage, identities will blur, the differences between the rights and responsibilities of various roles will diminish, and individuals will be unable to recognize points of maturation as they develop into full members of a society. When communication technology encourages similarity, when a technology portrays actors in a similar fashion regardless of role, and when actors fail to recognize social differences, the result is homogenization. For example, Meyrowitz (1985) argued that contemporary communication technology contributes to confusion of sex roles, difficulty maintaining authority, and

increasing similarities between adult and childhood behavior. I and others refer to his model as the Homogenization Hypothesis because it suggests social identities, levels of status and influence, and stages of social development will become blurred as a function of the unique characteristics of communication technologies.

Meyrowitz's ideas are a convenient place to observe paradox. Do ECTs blur social identities or do they become more distinct? Do ECTs decentralize social structures or do they reinforce hierarchies? Do ECTs blur social stages or do they reinforce them? The answer is "Yes."

No Sense of Self or A More Complex and Distinctive Self Identity

Hage and Powers (1992) have suggested that the "information age" provides a unique opportunity for self development. Similar to Meyrowitz, they anchor their arguments in role theory and symbolic interaction. Where Meyrowitz sees confusion and ambiguity, Hage and Powers see flexibility and complexity.

Hage and Powers describe the changes in the nature of organizations by focusing on the ECTs. The new technologies change the ways individuals perform work and family. Work is more complex and less rational in a post-industrial (PI) society. That is, the continuing addition of new knowledge makes it difficult to arrange work in the most efficient or rational manner. Skills useful for a specific job are less valuable than skills that enable a role occupant to process new information to meet individual needs.

In a PI society, work tasks and roles will be defined in terms of information gathering, problem solving, creating ideas, responding flexibly to new situations, and adjusting flexibly to interactions with others. In a PI organization, roles are defined by goals with no specific procedure for accomplishing them, the time and

place of role activity are not tightly constrained, service is an important part of roles, there is difficulty insulating work role activity from other social domains (e. g., family), and accomplishing tasks produces a sense of mastery in addition to satisfaction. In a PI society, parenting is more a team effort, raising children is more a creative act, most parents work, more people work at home, and people mix work and home concerns (i. e., they take work problems home). The "traditional" family is not the norm.

According to Hage and Powers, industrial selves feel most comfortable when there is a sense of certainty about who self is and where self sits in relationship to others, and when the feedback one receives is consistent. In an industrial society the emphasis is on learning the rules that make situations unambiguous. The PI mind, on the other hand, has the capacity to imagine scenarios that have not occurred, to envision new ways in which relationships and organizations can be structured. In the PI era, the emphasis will be on the ability to engage in fluid relationships, creative recasting of roles, and on inventing new forms of relationships and institutions. The emphasis is on transforming rules to individualize cases.

For Hage and Powers, self is the subjective sense one gains about one's essential character and worth. The individual comes to realize self concept through interactions with others. In the PI society, they contend, individuals must develop a complex self, one capable of entertaining different identities and roles with equal salience simultaneously. According to Hage and Powers, PI individuals 1) spend more effort constructing a self (i. e., reconstructing roles) than presenting it, 2) move away from a single core self to a complex configuration of identities, 3) are less dependent on performance and appraisal in

a particular sphere to gain esteem, and 4) rely less on the self esteem from the evaluations of others and more on a sense of efficacy gained from dealing with change. The complex self has the ability to handle change in the definition of social roles and their corresponding identity. The arguments of Hage and Powers highlight the need to develop interpersonal communication skills.

According to Meyrowitz (1985), ECTs blur social spaces, and according to Hage and Powers, ECTs provide the opportunity for individuals to interact within more distinct spaces and to construct a more complex self. There is yet another paradoxical alternative, Rogers (1985) observed that the new ECTs are demassified, shifting control of communication away from message producers to message consumers. For example, individuals may have nearly 100 channels on a cable system, but they may choose to watch only a few. Caller ID, voice mail, and e-mail mean that messages sent may be consumed at unanticipated times or may never be heard. Usenet groups may sanction unwanted or unacceptable messages. Each person or small group of consumers may create a separate and individualized ECT environment. What this means is that individuals may use ECT to protect a social space, and there is the danger that individuals may use ECT to sever their links to the rest of the society.

Last summer, in Fort Davis, Texas, members of the Republic of Texas held two hostages, two local citizens, in an effort to free one of their members from a local jail. The members of this movement claimed that the Untied States annexed Texas illegally. The leader of the Fort Davis group had not been arrested for holding these beliefs, for trying to recruit members, or for trying to put the matter to a vote. Rather, the leader had been jailed because of his attempts to disrupt and sabotage the local financial community with false financial documents. The

stand-off in west Texas came within a month of the Heaven's Gate cult's mass suicide in California, and during the week that Timothy McVeigh was on trial for the Oklahoma City bombing. All of these groups used ECT to restrict the nature of the messages they consumed. One national columnist commented

> While listening to various "officials" of the Republic of Texas being interviewed about all this, I was struck by how much they resembled the kids who used to get heavily involved with Dungeons and Dragons. Imagination is a wonderful thing, but at what point does it become delusion? When lonely losers use computers to find other lonely losers and create a group fantasy that becomes their entire lives, how far are they from Heaven's Gate? (Ivins, 1997, A15).

Decentralized Structures or Reinforced and Centralized Hierarchies

The distribution of resources and the nature of the resultant social structure have long been staples in theories about ECT. Just as notions of identity in the ECT literature parallel theories about specialization in the organizational literature, the concerns for hierarchies is similar to the organizational literature about power and social stratification. ECT's ability to influence the concentration of resources is at issue. Resources include money, physical space, promotions, information, and the ability to make decisions. Does ECT centralize or decentralize a social structure?

Meyrowitz's argument is that it is difficult to protect an information space. Social positions are difficult to maintain because ECT has made the boundaries permeable. The CEO no longer knows more than anyone, and, since the CEO is not on-line, the CEO may know less than most. The mystique surrounding occupations or public positions disappears when they are portrayed on television or in other ECT because they seem to act just like the rest of us. Universal access and the public's "right to know" may not have destroyed hierarchies, but the social distance between the top and the bottom has shrunk. Meyrowitz's conclusions are

similar to a host of organizational researchers who argue that ECT decentralizes (Danials & Spiker, 1994).

Are resources more evenly distributed after the introduction of ECT? There are several counter arguments. In American organizations, there has not been an equitable distribution of resources among the sexes. Becker and Levitt (forthcoming) investigated female perceptions of power and technology. Women were still reluctant to assume power, and they were not inclined to use the newer technologies as a way of increasing influence. Women have been excluded from dominant coalitions in organizations, and the current uses of ECT in organizations do not promise to make a difference. In other words, the current uses and practices surrounding ECT in organizations tend to reinforce sex differences.

The market place is the source of further evidence of centralization. Over the last several months, mergers have become the norm. It should come as no surprise that the number of ECT companies has diminished, and furthermore, information rich industries, such as banking, are also centralizing.

Are these structural trends unique to ECT? On the one hand, some have argued that decentralized structures are the natural state of human organization, but others have argued that organizations develop into specialized and centralized structures as part of a system's efforts to maintain a steady state (Boulding, 1978). These arguments are even more basic, extending into biology and the natural state of all living systems. Some have argued that morphostasis and homeostasis are the defining teleological states, and others have argued that such stability is the exception and that morphogenesis is the dominant state

(Buckley, 1967). With respect to ECT, the evidence for either side is equally compelling. ECT decentralizes and it centralizes.

Limited Role Development or Reinforced Socialization Phases

Has the gap between novice and craftsman shrunk? Do ECTs provide younger workers with access to enough information to close the gap between them and their older co-workers or superiors? Are organizational cultures so permeable and fluid that newcomers provide as much or more information than they seek? If the socialization processes have lost their distinctiveness and if the various progressive states of role development have lost their defining features, as Meyrowitz (1985) has contended, then the answers to all these questions is "Yes."

Anderson and Meyer (1988) argued that media tend to reinforce social routines. For them, communication is an interactive process in which communicants, content, and scene are all referenced and must be accounted for in sense-making performances. Sense-making is an improvisational performance of an interpretation, and sense-making is an ongoing process in which meanings emerge in layers. Meanings are many and varied. Literal meanings are the product of practiced, conventionalized strategies of interpretation.

Interpersonal communication is conducted through the mutual participation in the production of the content and the reciprocal supervision of its interpretation (Anderson & Meyer, 1988). The supervision occurs within an implied social contract in which one produces content intended to be meaningful to the other whose interpretation is reference to that intent. The shared meaning of interpersonal communication is the achievement of the joint performance of production and interpretation.

Mediated communication proceeds in two quasi-independent systems (Anderson & Meyer, 1988). In the production system, a network of social entities produces content as commodity for its own ends. However, all content carries with it master identities that inform us of what the content claims is truth, how true to its nature it can be, and what it can intend to accomplish communicatively. Is the content reality, fantasy, advertising, etc. Media conventions cue the identities of the content. Media use sets of rules that govern content element relationships. These logics relate to narrative, space, time, proportion, and format. In the reception system, attendance itself is an intentional performance in its own right, and content is interpreted through its accommodation in the methods and practices of everyday life. Shared meanings do not develop between producers and receivers. Shared meanings do develop among participants in the social action performances of reception and subsequent accommodation. Media and their texts are accommodated within the routines of everyday life.

For Anderson and Meyer (1988), the already exiting patterns of socialization influence the producers through master identities and media logics, and the already exiting patterns of socialization are the filters for interpreting the content and the basis for everyday routines. Anderson and Meyer (1988) are as concerned as much with identity as they are with socialization. However, current social and cultural ECT practices make social change difficult since the status quo has significant influence on both the production and consumption of content. Accommodating radically different content would be slower and more difficult than accommodating content connected to already established routines.

Paradoxical Impacts or Competing Theories

Summarily, some have demonstrated that ECT may blur social and psychological identities, others describe ECT's potential for a more developed sense of self, and still others can cite instances of ECT assisting in social fragmentation. There are instances when ECT decentralizes, and there are other instances when ECT centralizes. ECT may shorten socialization phases, but ECT has been used to reinforce current cultural practices.

Do these paradoxical impacts actually exist or are these just differences of opinion? How does one demonstrate the types of social impacts noted above? The arguments for any ECT impact use similar evidence. The norms are to support claims with broad social data (e.g., census data and occupational data), the ideas of others, logic, and anecdotes. The researchers and theorists are relying on the confirmation of their descriptions in the readers' experiences and the utility of the theories to explain experience. If this type of evidence seems weak, consider the alternatives. What experiments would demonstrate the emergence of a complex self as a function of ECT? Where is the control or comparison group? How can surveys demonstrate changes in social structure or connect such changes to ECT? What qualitative data is sufficiently generalizable to describe the status of socialization patterns in the society? Juridical criteria seem appropriate for these types of claims. Since the arguments are strong and since the instances described by the theorists correspond to the experiences of readers, one can only conclude that the paradoxical impacts do indeed exist. More reliable and valid data would be appropriate for less powerful but more precise theories. There is a need to develop the more intermediate context specific theories that would lend themselves to such evidence.

Predictors of Social Impacts

How is it possible for ECT to have such paradoxical impacts? Nearly all the researchers noted above view the impacts as a function of ECT use, rather than a fixed feature of any ECT. That is, none of them would argue that the nature of ECT determines or causes the specific outcomes. Rather it is the way individuals have used or tend to use a technology. For example, the existence of airplanes and other forms of mass transportation does not determine or cause a conference such as this or my participation in it. However, the existence of such technology allows me to consider participating, and although my decision to participate was based on several other considerations, I could not even think about participating if the transportation technology did not exist. Outcomes involving technology are a function of physical, cultural, social, and psychological factors. The specific conditions of these factors predict specific sets of outcomes.

The impacts noted above tend to cluster in much the same way as Rogers' dimensions of impacts. Decentralized structures with minimal socialization tend to go together with either blurred selves or complex selves. This cluster of impacts places a higher value on interaction and flexibility. These impacts are more fluid and dynamic. Centralized structures with well defined stages of socialization tend to go together with specialized and distinct roles. These impacts are more reinforcing and stabilizing. When are the impacts of ECT dynamic, and when are they stabilizing?

Complexity is the guiding construct throughout the following presentation. Complexity refers to the number of factors under consideration, the numbers of actual or potential interactions between those factors, and the predictability of those patterns of interaction. The most complex situations involve with the

greatest number of factors with unlimited interaction and random probabilities for that interaction. My use of complexity is similar to older organizational models used to describe tasks and task complexity (Perrow,1970). When ECT is part of highly complex conditions, the social impacts will be dynamic. When ECT is part of minimally complex or simple conditions, the impacts will be reinforcing and stabilizing.

Physical predictors are sensory verifiable factors. This includes the number and nature of competitors in a market, the diversity of a population, the nature of a task, and the physical characteristics of a given ECT. Individuals choose to use technology, in part, by matching the complexity of technology to the complexity of the task (Lengel & Daft, 1988). The complexity of the physical conditions will predict the complexity of the social impacts.

A culture consists of a set of basic assumptions and values shared by a group of people along with the behaviors and artifacts characteristic of those people. Culture may refer to nations, states, ethnic groups, regions, language groups, religions, social groups and classes, and organizations. Cultural assumptions and cultural behaviors as mutually causal. The experiences throughout an individual's social environment lead to sets of expectations for how things should be done and what certain things mean. Communicators carry these perceptions with them, and like other levels of role and rule perceptions, they use these expectations in interpreting the behavior of others and in selecting their own behavior. The cultural level expectations act at a more tacit and unconscious level than other more immediate perceptions. However, they act as the base line, the benchmark, for other relationship perceptions.

Cultures vary along at least four dimensions (Hofstede, 1991). Power distance is the extent to which individuals expect and accept highly stratified social roles and relationships, an unequal distribution of resources. Individualism is the extent to which individuals expect to rely on themselves separately and apart from groups; collectivism is low individualism, expecting strong, cohesive groups that protect their members and have a lasting loyalty. As a cultural dimension, masculinity refers to the extent to which there are separate and identifiable gender distinctions. Uncertainty avoidance is the extent to which a culture feels threatened by unknown or uncertain situations.

Cultural complexity is highest when power distance is low, individualism is high, masculinity is low and uncertainty avoidance is low. In such cultures, the impacts of ECT would be more dynamic and fluid than in simpler cultures. In simpler cultures ECT would reinforce power differences, group identities, and separate gender roles. ECT would also be used to avoid different or new ideas.

Social complexity refers to the extent of horizontal and vertical differentiation in a structure and the flexibility of that structure. The least complex structures are similar to a simple work group with a single supervisor directing individuals who perform the same basic job. The most complex structures are project and matrix designs in which individuals must continually invent novel social structures as they maintain multiple reporting lines. Traditional bureaucracies lie between these extremes. Adding to the complexity is the variety of social complexity across units within the same larger social structure and the evolutionary history of the system (Salem, 1997). ECT will assist individuals in complex structures to integrate and coordinate that complexity. However, ECT

can keep things simple in a simple system because ECT can assist in cataloging and accounting.

Individuals interpret all of the factors noted above through their relational and psychological complexity. Individuals choose to use a particular technology based on the characteristics of the technology and the task, and also on the conversations around them and their own personal predispositions toward the circumstances (Fulk et al, 1990). That is, relational and psychological factors interact with other factors to predict the social impacts.

Relational complexity refers personal to network complexity. That is, it refers to the number, variety, and flexibility of contacts in an individual's personal network. Psychological complexity is cognitive complexity; it is the scope, depth, and configuration of an individual's thinking and feeling. When relationaly and psychologically complex individuals use ECTs, the social impacts tend to be more dynamic and fluid. When individuals with simpler relational and psychological conditions use ECTs, the social impacts will be stabilizing.

Finally, communicative competence refers to the variety of knowledge, attitudes, and skills required to sustain communication across a variety of contexts. Individuals are more or less competent depending on their acquisition of the variety of knowledge, attitudes, and skills and on their ability to employ them in a variety of communicative situations. When communicatively competent individuals use ECT, the social impacts will be dynamic, and when less competent individuals use ECT, the impacts tend to stabilize and reinforce.

Conclusion

The social impacts of electronic communication technology are as varied as the initial conditions prior to their use. In many instances, one type of social

impact will exist along with an apparently opposite impact. The social impact of ECT may be greater connectivity in one part of a culture and segmentation in another part. The impacts appear to be paradoxical. There are multiple intervening variables.

The last section consisted of a list of potential predictors of the social impacts, and the list of these separate factors helps explain the apparent paradoxical impacts. However, that section suggests two things. First is the role of the complexity of initial conditions. When ECT is part of highly complex conditions, the social impacts will be dynamic. When ECT is part of minimally complex or simple conditions, the impacts will be reinforcing and stabilizing.

The last section also suggests the social impacts of ECT are part of the interaction between ECT and the initial conditions. ECT tends to act as a catalyst for processes already set in motion in the initial conditions. If initial conditions are fluid and dynamic, ECT will lead to greater dynamism. If initial conditions are stable and well-defined, ECT will lead to greater stability.

Two years ago, a married woman in rural Virginia developed an on-line relationship with a man in rural North Carolina. The relationship was intimate and intense, and it involved sado-masochistic fantasies. The woman left her home one Thursday evening to meet a sure death as part of some sexual ritual. The newspapers blamed her computer. However, consider the initial conditions. The unhappy social and psychological state of the woman preceded her on-line relationship. What her internet links allowed her to do was to develop a relationship more quickly, and the links enabled the relationship to move rapidly to a tragic end. With a slower technology, the end may have been different but it

may still have been sad. With happier initial conditions, the end may have been happier.

A friend of mine who has worked in communication industries for many years is fond of pointing out the myth of ECT improving productivity. "If you take disorganized and incompetent workers and give them a computer, they will not become more organized or more competent" he says. "Instead, they will make the same mistakes they made before, but they will make them faster and with greater impact."

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